Advant® OCS
with Master software

Advant Controller 55

Version 1.1

Product Guide

3BSE 016 143R0001

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Chapter 1 Overview

Advant Controller 55 is a small, low cost, compact and configurable controller for binary or analog control, used either as a Programmable Controller (PLC) or Remote Terminal Unit (RTU). It can thereby be used either stand-alone or as an integrated part of an Advant OCS system as well as in any other distributed control system.

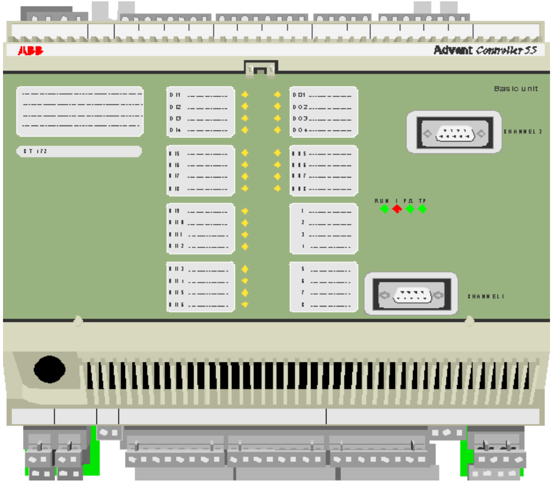

Figure 1-1. Advant Controller 55 Basic Unit

1.1 Product Benefits

Advant Controller 55 is specifically designed for small control applications or remote terminal applications. It also includes handling of analog signals for loop control, binary and arithmetical application. Advant Controller 55 is designed to operate in industrial environments as a compact peripheral station.

1.2 Features

Advant Controller 55 covers a wide range of functions such as:

- Logic and sequence control.
- Analog data handling.
- Arithmetic and regulatory control.
- Build in I/O, with a maximum capacity of 120 digital and 50 analog I/O points.
- Communication via RCOM/RCOM+.
- Configurable directly connected or remotely via RCOM/RCOM+.

Chapter 2 Functional Description

2.1 Controller Basics

2.1.1 Start-up of the Controller

Start-up of the Advant Controller 55 can be done in three ways:

- Stop
- Clear (cold start)
- Auto (warm start).

In stop mode the controller does not activate any application. It waits for commands from a connected engineering station.

In cold start mode the controller also performs its self-tests, checks the user flash PROM for a valid application and activates this application. Next, complete initialization and I/O module configuration are performed.

In warm start mode and in case of a power failure and valid RAM content, the controller checks the parameters of I/O modules, configures the modules if necessary, and continues execution of the application from the point of interruption.

2.1.2 Process Control

Program entry, testing, documentation and fault tracing are supported by Advant Station 130 Engineering Station.

Advant Station 130 Engineering Station is an IBM PC-based programming and service tool. It features graphical function chart programming and a user interface with windows, pull-down menus and “point and click” selection.

Communication with Advant Controller 55 is accomplished via a standard serial interface from the personal computer.

An application program for an Advant Controller 55 consists of a DB part and a PC program. The DB part and PC program cannot be loaded separately.

Process control applications are programmed in ABB Master Programming Language, AMPL. AMPL is a function-block language with graphic representation. It has been developed for process control applications. The building blocks are called PC elements. There is a range of PC elements, from simple AND blocks to complete PI regulators. The controller can be programmed in AMPL fully on-line, that is, with the program running and controlling the process.

The PC program has access to process variables via DB elements. These elements also contain all I/O system configuration information. Configuring the I/O system involves filling in DB elements with parameters for each I/O module and channel. Typical parameters are tag name, signal range, filter time, etc.

Analog values are automatically converted to process-related units, relieving the application programmer from all considerations about scaling.

Digital I/O is scanned cyclically every 10 ms. Scanning of one analog input lasts about 60 ms. The analog inputs used in the application program are scanned one after the other.
Analog outputs are scanned cyclically every 200 ms. The I/O values are stored in an internal memory in Advant Controller 55 which is read/written with the cycle time of the PC programs (PCPGM, CONTRM, SEQ, MASTER). You can select cycle times for the PC programs from 2 ms to 20 s in steps of 2 ms.

Diagnostic functions supervise the system at start up and during normal operation. The status of the modules are indicated by LEDs and are also accessible by terminals on the DB element.

PC Elements

The range of ready-to-use PC elements is wide and powerful. It contains elements for:

- Logic Control
- Time Delays
- Sequence Control
- Data Converting
- Calendar Time Functions
- Arithmetics
- Regulatory Control
- Pulse counting.

The PC elements are listed under the program modules in Chapter 3, Software Components.

2.2 I/O System

Analog Inputs

- The analog inputs can be configured for +/-20mA, 4-20mA or +/-10V
- Values are represented by 0 - 100%
- Resolution is 11 bit + sign.

Analog Outputs

- The analog outputs can be configured for 0-20mA or 4-20mA
- Values are represented by 0 - 100%
- Resolution is 12 bit.

Digital Inputs

- There are AC 55 units for two different input voltages available, 24V or 48V.

Digital Outputs

- Relay outputs are available.

2.3 Field Communication

RCOM/RCOM+

RCOM/RCOM+ (Remote COMmunication) provides multidrop, point-to-point or telecommunication capabilities (for example, dial-up connections over public telephone networks).

Traffic on an RCOM/RCOM+ link is controlled by a communication master. Direct communication is only possible between the master and the communication slave devices. Stations connected via RCOM/RCOM+ appear in the Advant OCS system as stations on a local MasterNet control network.

Advant Controller 55 can act as slave or master of a RCOM/RCOM+ link.

The following RCOM/RCOM+ functions are examples of functions performed in master mode:

- Polling of event from the slaves.
- Read and Write command to the slaves.
- Clearing of the event queues and setting of the clocks in the slaves
- Blocking and deblocking of the slaves.

The data transfer is performed using packets of data (Data Sets). Time stamped events can also be transferred from slave to master.

Up to 25 slave nodes can be connected in a RCOM/RCOM+ configuration with Advant Controller 55.

2.4 Event Handling

Advant Controller 55 supports event detection and transfer of time-tagged events to Advant Controller 400 Series or Advant Controller 110 via RCOM.

For digital signals represented as PC variables of type Boolean, events can be generated in case of status change by using the DB element DIC.

Such a calculated event is time tagged by Advant Controller 55 in the moment of event detection.

For analog signals represented as PC variables of type Real, events can be generated in case of limit violation by using the DB element AIC. Time tagging is done when the value passes the limit.

2.5 Time Synchronization

The time synchronization facility enables the cyclic synchronization of the internal clock of Advant Controller 55 via RCOM.

Advant Controller 55 can be configured either as time slave to be synchronized or as time master to be the distributor of the time on the network.

Chapter 3 Software Components

3.1 Basic Program Module

The Advant Controller 55 system software includes a real time operating system, an AMPL element library, diagnostic functions and interfaces to engineering and operator stations. The application program is stored in a nonvolatile memory. At start-up it is copied from the nonvolatile memory to the RAM memory where it is executed.

The application program consists of one AMPL program, that is, one PCPGM, and up to 31 subordinate execution units (CONTRM, SEQ or MASTER). These are executed cyclically with execution times selectable from 2 msec to 20 s. It is also possible to define subordinated execution units (CONTRM) that are executed once at cold start or warm start. The start-up sequence can be defined by the user.

Diagnostic functions monitor the system operation and report any fault found. The monitoring functions include a watchdog, bus supervision and memory checking. Faults are indicated on the diagnostic display on the front of the unit. More detailed diagnostic information can be obtained with an Advant Station 130 Engineering Station.

The basic program module has a functional contents in accordance with:

- Logic control and time delays
- Communication via RCOM/RCOM+
- Arithmetic
- Sequence control
- Event handling and transfer of events to Advant Controller 400 Series
- Calendar time functions.

Most of the above mentioned functions are realized with one or several AMPL elements.The contents of the PC element library in the basic program module is shown in Table 3-1.

Table 3-1. PC elements in the basic program module

Type	PC elements
Structure	PCPGM, CONTRM, FUNCM, MASTER, SLAVEM, BLOCK, SEQ, STEP
Logic	AND, AND-O, OR, OR-A, XOR, INV, TRESH-L, SR, SR-AA, SR-AO, SR-OA, SR-OO, SR-D
Arithmetic	ADD, ADD-MR, SUB, MUL, MULDIV, DIV, DIV-MR, ABS, SQRT, LIM-N
Time	MONO, TON, TOFF, TON-RET, TRIGG, AND-TRG, OR-TRG, OSC-B, TIMER, SYSTIME
Registers	FIFO, MOVE, REG, SHIFT
Multiplexers	MUX-I, MUX-MI, MUX-MN
Code converters	CONV, CONV-BI, CONV-IB, BGET, BSET
Counters	COUNT
Comparators	COMP-B, COMP-I, COMP-R, MAX, MIN
Switches	SW, SW-C
Supervision	SYSL

The Advant Controller 55 Basic unit contains one RCOM/RCOM+ interface. Communication via RCOM/RCOM+ comprises the following functionality:

- data transmission using RCOM/RCOM+ acting as master or slave
- communication speeds between 150 and 9600 baud
- dial up to master stations in case of alarm (up to 4 phone numbers)
- dial up of slave stations and time synchronization
- executing of RCOM/RCOM+ protocols
- operating Advant Controller 55 which is directly connected to an Advant Controller 400/450 via RCOM/RCOM+ from an Advant Station 130 Engineering Station connected to the Advant Controller 410/450.

The Advant Station 55 basic program module allows event handling, that comprises the following functionality:

- detection of time tagged events from digital or analog AMPL output terminals (calculated events)
- event transfer via RCOM/RCOM+.

3.2 Optional Program Modules

3.2.1 OPT1 Extended PC Elements

The optional program module OPT1 extends the PC element library included in the basic program module with PC elements for supporting the function Regulatory control. Regulatory control is realized with PC elements. The contents of PC elements in OPT1 are:

Table 3-2. Additional PC elements in program module OPT1

Type	PC element
Registers	REG-G
Function generator	FUNG-1V
Filter	FILT-1P
Feedback	P-1, INT, DER, PI, PIP, PDP, CON-PU1, RAMP

Chapter 4 Hardware Components

4.1 System Unit

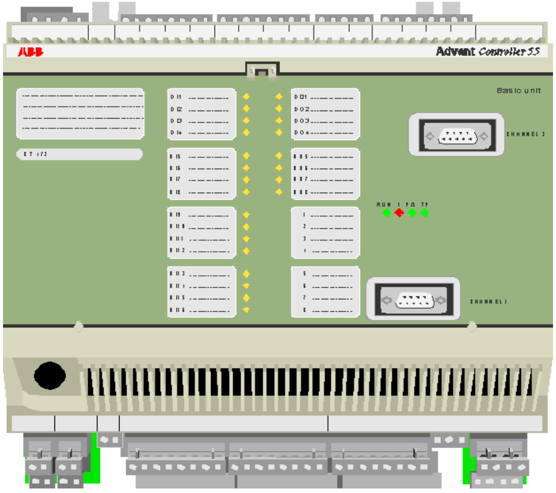

Figure 4-1. Advant Controller 55 Basic Unit

Advant Controller 55 consists of a basic unit with 34 I/O channels and up to 4 expansion units, each with additional 34 channels.

The hardware for Advant Controller 55 consists of enclosed units which are equipped with built-in power supply for direct connection to 115 V a.c., 230 V a.c. or 24 V d.c.

The units can be mounted directly on a wall or in a protective enclosure on a mounting plate or on two DIN mounting rails.

NOTE

The Advant Controller 55 can be CE-marked provided it is mounted in a conventional steel box/cabinet.

4.1.1 Scope of Units

There are two versions of each of Basic Units and Expansion units. They differ from each other with regards to the digital inputs process voltage. The units are presented in the tables below:

Table 4-1. Basic Units

Consists of	Description
CT481	**Basic unit 24 V d.c.** DI: 16 channels, 24 V d.c., isolated. AI: 8 ch., resolution 11 bit+sign, ±20 mA, 4-20 mA, ±10 V DO: 8 ch, relay contacts(1) AO: 2 ch., resolution 12 bit, 0-20 mA, <500 W load RS 232 V.24 for modem connection, Supply voltage: 115/230 V a.c. max 100 mA, 50/60 Hz or 24 V d.c max 840 mA
Physical dimensions	240 x 240 x 90 (9.5 x 9.5 x 3.5), h x w x d mm (inches)
CT482	**Basic unit 48 V d.c.** DI: 16 channels, 48 V d.c., isolated AI: 8 ch., resolution 11 bit+sign, ±20 mA, 4-20 mA, ±10 V DO: 8 ch., relay contacts [1] AO: 2 ch., resolution 12 bit, 0-20 mA, <500 W load RS 232 V.24 for modem connection, Supply voltage: as above
Physical dimensions	240 x 240 x 90 (9.5 x 9.5 x 3.5), h x w x d mm (inches)

(1) Relay data: Load current: max. 3 A, min. 0.1 A at 24 V or 2.5 VA.
Breaking capacity: a.c. max 720 VA at cos F > 0.4 d.c. max. 44 W at L/R <40 ms

Table 4-2. Expansion Units

Consists of	Description
CX473	**Expansion unit (1) 24 V d.c.** DI: 16 channels, 24 V d.c., isolated AI: 8 ch., resolution 11 bit +sign, ±20mA, 4-20mA, ±10 V DO: 8 ch, relay contacts(2) AO: 2 ch., resolution 12 bit, 0-20 mA, <500 W load, Supply voltage: 115/230 V a.c. max 60 mA, 50/60 Hz or 24 V d.c max 600 mA
Physical dimensions	240 x 240 x 90 (9.5 x 9.5 x 3.5), h x w x d mm (inches)
CX475	**Expansion unit [1] 48 V d.c.** DI: 16 channels, 48 V d c., isolated AI: 8 ch., resolution 11 bit+sign, ±20 mA, 4-20 mA, ±10 V DO: 8 ch, relay contacts[2] AO: 2 ch., resolution 12 bit, 0-20 mA, <500 W load, Supply voltage: as above
Physical dimensions	240 x 240 x 90 (9.5 x 9.5 x 3.5), h x w x d mm (inches)

(1) **Note!** Max 4 expansion units can be connected to a basic unit
(2) Relay data: Load current: max. 3 A, min. 0.1 A at 24 V or 2.5 VA.
Breaking capacity: a.c. max 720 VA at cos F > 0.4 d.c. max. 44 W at L/R <40 ms

Table 4-3. Options

Description
Expansion cable length 1.5 m (4.9 ft.), for longer-distance extension

The Basic Unit CT481 and CT482 has the following characteristics:

- They contain a Motorola MC68302, 16 MHz processor, 224 kilobytes nonvolatile memory (Flash PROM) for the user built application and 512 kbytes nonvolatile memory (Flash PROM) for the system software. At start-up the application is copied from the nonvolatile memory into RAM memory where it is executed. There is a sum of 512 kbytes RAM available for operating system and application, of which at least 256 kbytes are free for application programs. The memory is not expandable.
- Two RS-232-C ports dedicated for connection of Advant Station 130 Engineering Station and for connection of a CCITT V.24 based communication.
- The unit can be switched off for 24 h without losing the RAM content.

4.1.2 Communication

Advant Controller 55 comes with a built-in CCITT V.24 serial interface including signals for modem control. It can communicate through a point-to-point or a multidrop line, as well as dial up line, depending on the external modem. Advant Controller 55 can act as communication slave or as master for up to 25 slaves and supports ABB’s protocols RCOM and RCOM+.

For data protection, data sets are monitored with checksums and all transactions are acknowledged. In case of checksum error or acknowledgment failure, retransmission is attempted automatically until the error clears or until a time-out alarm is raised.

4.1.3 Power Supply for sensors

A separate, isolated supply circuit for digital and analog sensors is built in.

- Digital inputs (process voltage is provided by the unit if supplied with 115 or 230 V a.c.)
  - Voltage 24 V d.c., ±25%, max. load 200 mA or
  - Voltage 48 V d.c., ±25%, max. load 100 mA
- Analog inputs
  - Voltage 24 V d.c., ±25%, max. load 200 mA
- Analog outputs
  - Current 20 mA, max. load impedance 500 Ω.

Chapter 5 Mechanical Design

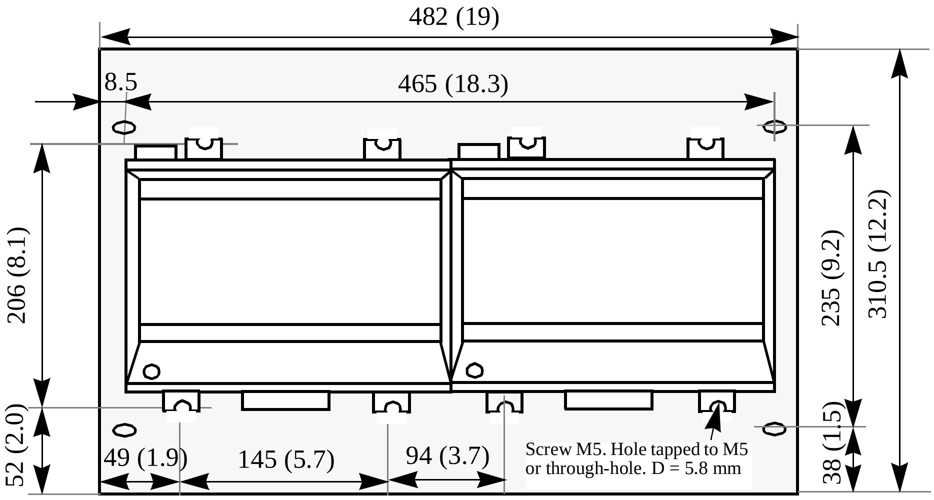

Figure 5-1. Measurements in mm (in.) for Advant Controller 55 and Expansion Unit mounted side by side on a mounting plate

The enclosure is in accordance with IEC 529, IP20. All external connections are plug detachable screw terminals with 2-wire connection of all process signals.

The Basic Units can be expanded with Expansion Units using the same type of enclosure.

Ribbon cables are used for the interconnection of closely mounted units. Optional there is also a 1.5 m (4.9 ft.) long cable for interconnection of units that are further apart.

Chapter 6 Technical Data and Performance

6.1 Number of Process Inputs and Outputs

The total number of I/O-signals depends on number of expansion units. Up to 4 expansion units can be attached to a basic unit. Each unit has 16 digital inputs, 8 analog inputs, 8 digital outputs and 2 analog outputs. Consequently one Advant Controller 55 station can be expanded to a maximum of 80 digital inputs, 40 digital outputs, 40 analog inputs and 10 analog outputs.

Table 6-1. Maximum configuration of Advant Controller 55

Description	Maximum No.
Basic Units	1
Expansion Units	4
Digital inputs per unit	16
Digital inputs total	80
Digital outputs per unit	8
Digital outputs total	40
Analog inputs per unit	8
Analog inputs total	40
Analog outputs per unit	2
Analog outputs total	10
RCOM/RCOM+ channels in basic unit	1

6.2 RCOM/RCOM+ Communication

The RCOM interface in the Advant Controller 55 can act as master or slave. In case of master operation it can have up to 25 slaves. Data between master and slave station is transferred using MVB elements (MVI data block) which is similar to data set elements. MVB elements hold references to DAT elements. 1 to 8 DAT elements can be connected to one MVB if RCOM is used, 1 to 24 DAT elements can be connected to one MVB if RCOM+ is used.

Table 6-2. Data communication on RCOM/RCOM+

Description	Maximum No.
Number of RCOM/RCOM+ networks per AC 55 as master	1
Number of slaves per AC 55 as master	25
Number of MVBs per AC 55	340

6.3 Event Transfer and Detection

Advant Controller 55 supports calculated AI and DI events (DB element AIC or DIC). After the detection of an event in Advant Controller 55 the event can be configured to transferred via RCOM/RCOM+ to an Advant Controller 110/410/450 for further treatment. For more information about event transfer and detection, please refer to the tables below.

Table 6-3. Event transfer and detection

Description	Maximum No.
Number of event queues per Advant Controller 55	16
Number of entries per event queue	1000
Number of event set elements per Advant Controller 55	16
Number of event detection elements per event set element	32
Total numbers of event detection elements per AC 55	512
Number of event generating slaves	16

Table 6-4. Event transfer and detection resolution

Description	Minimum.
Resolution of calculated events	10 ms(1)

(1) Scan time can be set up to 327 s.

6.4 Cycle and Scan Times

An Advant Controller 55 application program consists of one AMPL program (PCPGM) which can be further divided into a maximum of 31 execution modules (CONTRM, MASTER) or sequence modules (SEQ). Different cycle-times and priorities may be assigned to the execution modules so that the AMPL program can include both fast and slow control functions. Cycle times can be chosen from the range 2 ms to 20 s in steps of 2 ms.

Control modules with shorter cycle times always have a higher priority than those with longer cycle times. The execution order of modules with equal cycle times can be selected explicitly. Single activation at cold start or warm start can be chosen by the CONTRM´s call parameter C2.

6.5 I/O Scanning

Table 6-5. Scan times for digital and analog I/Os

I/O	Scan time
Digital inputs, all channels	10 ms
Digital outputs, all channels	10 ms
Analog inputs, per active channel	60 ms
Analog outputs, all channels	200 ms

6.6 CPU Load Calculation

To determine the CPU load for an Advant Controller 55, consider the following points:

1. The load, caused by I/O scanning, of the basic unit is 12% and increases with 2.5% for each expansion unit added (max. 4 units).
2. Further 20% shall be reserved for basic system functions
3. The remaining 58 - 68% CPU capacity is available for the application program.

The formula for calculating the load is:

Load in% = ((N x T)/ Tc) x 100%, where
N = number of functions
T = function execution time (ms)
Tc= function cycle time (ms).

Table 6-6 gives some typical execution times to be used for load approximations. The figures are primarily intended for checking whether or not a system is close to the maximum load. More information about load calculations in the manual AMPL Configuration Advant Controller 55.

Table 6-6. Execution times, basic processing and I/O functions

Type	Description	Execution time T (ms) (1)
Logic	1 AMPL element AND, OR, INV, XOR (with 2 inputs)	0.01
Logic	1 AMPL element AND, OR (with 4 inputs)	0.02
Arithmetic	1 AMPL element ADD, SUB, MUL, DIV, (with 2 inputs)	0.06
Digital I/O	16 digital inputs	0.10
Digital I/O	8 digital outputs	0.06
Analog I/O	8 analog inputs	0.07
Analog I/O	2 analog outputs	0.02

(1) Mean value. Scan time for I/O scanning according to Table 6-5 must be added to this figures

6.7 Memory Requirements

At least 256 kbytes of memory (RAM) is available for the application program. Use the following table for a rough calculation of the application memory requirements.

Table 6-7. Memory requirements for seven different application programs

Program No.	**Program description**	**Input/Output Data Set**	**Required memory size (kbytes)**
1	1 CONTRM with 16 x 3 input AND	48 inputs 16 outputs	9.0
2	1 CONTRM with 32 x 2 input AND	64 inputs 32 outputs	9.75
3	1 CONTRM with 24 x 2 input AND + 1 CONTRM with 16 x 2 input ADD	80 inputs 40 outputs	11.0
4	As 3 plus 1 CONTRM with each 5 x 4 real inputs and outputs via RCOM line	80 inputs 40 outputs 10 MVB (each with 4 DATs)	14.25
5	As 3 plus 1 CONTRM with each 25 x 4 real inputs and outputs via RCOM line	80 inputs 40 outputs 50 MVB (each with 4 DATs)	22.5

Chapter 7 Environmental Immunities

7.1 Installation without a Cabinet

You can install the Advant Controller 55 without a cabinet. From the EMC and electrical safety point of view, the system works properly under industrial environmental conditions. For information on the environmental conditions for an Advant Controller 55 system (climatically and mechanical and electrical environment), see the *Installation Rules Reference Manual*.

Enclosure protection class of the Advant Controller 55 units: IP 20.

7.2 Installation in a Cabinet or Box

7.2.1 Mechanical Requirements

The Advant Controller 55 is intended to be mounted in a cabinet or box.

Recommended space inside the cabinet for different configurations is as follows.

- One unit:
  - 140 (90) mm x 240 mm x 240 mm (D x W x H)
- Two units:
  - 140 (90) mm x 482 mm x 240 mm (D x W x H)

The depth of 140 mm (ca.) depends on the plugs and cables used for the modem connection (serial interface Channel2). If no modem cable is connected, the depth is 90 mm.

7.2.2 Thermal Requirements

The thermal requirements a cabinet must fulfill depend on the following.

- Max. power dissipation per unit: 13 Watts basic unit, 6 Watts exp. unit
- Max. ambient temperature of the units: 60°C
- Max. ambient temperature of the cabinet: 40°C.

7.2.3 Cabinet Conductivity

The EMC of the Advant Controller 55 is designed for an industrial environment. For this reason, there are no special requirements with respect to cabinet conductivity and shielding in order to achieve high EMC in an industrial environment.

Chapter 8 Ordering

Price List 3BSE001749

8.1 Basic Unit

Table 8-1. Basic units

Description	Consists of	Article No.
Basic unit 24 V d.c. DI: 16 channels, 24 V d.c., isolated AI: 8 ch., resolution 11 bit+sign, ±20 mA, 4-20 mA, ±10 V DO: 8 ch., relay contacts (1) AO: 2 ch., resolution 12 bit, 0-20 mA, <500 Ω load RS 232 V.24 for modem connection Supply voltage: 115/230 V a.c. max 100 mA, 50/60 Hz or 24 V d.c max 840 mA Screw terminal blocks for process signals and power supply Basic system software	CT481 with accessories for mounting on rails BASE on 3.5” disk	3BSE006437R0001
Basic unit 48 V d.c. DI: 16 channels, 48 V d.c., isolated AI: 8 ch., resolution 11 bit+sign, ±20 mA, 4-20 mA, ±10 V DO: 8 ch., relay contacts (1) AO: 2 ch., resolution 12 bit, 0-20 mA, <500 Ω load RS 232 V.24 for modem connection Supply voltage: as above Screw terminal blocks for process signals and power supply Basic system software	CT482 with accessories for mounting on rails BASE on 3.5” disk	3BSE006438R0001

(1) Relay data: Load current: max. 3 A, min. 0.1 A at 24 V or 2.5 VA.
Breaking capacity: a.c. max 720 VA at cos F > 0.4, a.c. max. 44 W at L/R <40 ms

8.2 Software Options

Table 8-2. Software option

Description	Consists of	Article No.
OPT1, Software option 1, extended AMPL element set	Software on 3.5" diskette	3BSE006571R0001

8.3 Hardware Options

Table 8-3. Expansion Units

Description	Consists of	Article No.
Expansion unit 24 V d.c. DI: 16 channels, 24 V d.c., isolated AI: 8 ch., resolution 11 bit+sign, ±20 mA, 4-20 mA, ±10 V DO: 8 ch., relay contacts (1) AO: 2 ch., resolution 12 bit, 0-20 mA, <500 Ω load Supply voltage: 115/230 V a.c. max 100 mA, 50/60 Hz or 24 V d.c max 840 mA Screw terminal blocks for process signals and power supply Ribbon cable for connection to next unit	CX473 with accessories for mounting on rails	3BSE006439R0001
Expansion unit 48 V d.c. DI: 16 channels, 48 V d.c., isolated AI: 8 ch., resolution 11 bit+sign, ±20 mA, 4-20 mA, ±10 V DO: 8 ch., relay contacts (1)AO: 2 ch., resolution 12 bit, 0-20 mA, <500 Ω load Supply voltage: as above Screw terminal blocks for process signals and power supply Ribbon cable for connection to next unit	CX475 with accessories for mounting on rails	3BSE006440R0001

(1) Relay data: Load current: max. 3 A, min. 0.1 A at 24 V or 2.5 VA.
Breaking capacity: a.c. max 720 VA at cos F > 0.4, d.c. max. 44 W at L/R <40 ms

NOTE

Max. 4 expansion units can be connected to a basic unit

Table 8-4. Other options

Description	Consists of	Article No.
Expansion cable length 1.5 m (4.9 ft.), for longer-distance extension	DSTK00D	GVR1908212R0001

8.4 Documentation

Table 8-5. Documentation

Title	Description	Article No.
Advant OCS User Documentation on CD-ROM	CD-ROM containing all manuals listed below in this table	3BSE008143R0701
Interference - Free Electronics	Describes how to design circuit boards, electronic devices and systems with high immunity to interference	3BSE000877R0001
Advant OCS Installation Rules User's Guide	User's Guide describing the installation rules for Advant OCS, to ensure correct function in environments where disturbance are present	3BSE009178R0001 Rev. A
Data Base Elements Advant Controller 55	Reference Manual describing the DB Elements used in Advant Controller 55	3BSE006525R0101
PC Elements Advant Controller 55	Reference Manual describing the PC Elements used in Advant Controller 55	3BSE006526R0101
AMPL Configuration Advant Controller 100 Series	Contains instructions about configuration and application programming, fault tracing and maintenance of Advant Controller 110, Advant Controller 70, and Advant Controller 55	3BSE009626R0201
Advant Controller 55 User´s Guide	User's Guide describing the Advant Controller 55 equipment and how to install and commission the system	3BSE006528R0101
RCOM Advant Controller 55 User´s Guide	Contains a technical description, instructions for installation, start-up, design and fault tracing of Remote COMmunication in Advant Controller 55.	3BSE006529R0001 Rev. A

3BSE 016 143R0001

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